

WHAT WE CLAIM IS :

1. A method of analyzing the wavefront of a light beam, comprising the following steps of :

5 placing a two-dimensional diffraction grating with rectangular meshing in a plane which is perpendicular to said light beam and which is optically conjugated with a plane of analysis of the wavefront, thereby multiplying an intensity function by a phase function, said intensity function defining a rectangular meshing of sub-pupils in said two-dimensional grating transmitting the light from said light beam to form a plurality of secondary beams disposed in accordance with said rectangular meshing, and said phase function introducing a phase shift between two
15 adjacent secondary beams such that said two adjacent secondary beams are in phase opposition, and

creating and observing an image formed by interference between said secondary beams in a plane located at ^a a predetermined distance from said
20 perpendicular plane, deformations in said image being related to the slopes of the analyzed wavefront.

2. The method claimed in claim 1 wherein each sub-pupil has an area close to half the area of an elementary
25 mesh of said rectangular meshing.

3. The method claimed in claim 1 wherein said meshing defined by said intensity function is a square meshing.

30 4. A system for analyzing the wavefront of a light

beam, said system comprising :

- input optics optically conjugating a reference plane with a plane in which said wavefront is analyzed,

- a two-dimensional intensity grating with rectangular meshing in the reference plane, said intensity grating having an elementary intensity mesh in which an elementary intensity pattern is disposed and which is of length L in a first direction of said rectangular meshing and of width l in a second direction of said rectangular meshing,

- a two-dimensional phase grating with rectangular meshing in the reference plane, said phase grating having an elementary phase mesh in which an elementary phase pattern is disposed and which is of length $2L$ in the first direction of said rectangular meshing of said phase grating and of width $2l$ in the second direction of said rectangular meshing of said phase grating,

- said elementary phase meshes having sides coinciding with sides of said elementary intensity meshes, and said elementary phase pattern introducing a phase shift close to π (modulo 2π) between two secondary beams passing through two adjacent elementary intensity patterns, and

- means for observing an image formed by interference between said secondary beams in a plane located at a predetermined distance from said reference plane, deformations in said image being related to the slope of the analyzed wavefront,

30 2.5. The system claimed in claim 1 wherein said intensity grating is of the rectangular crossed Ronchi

type.

3.¹/₈. The system claimed in claim ¹/₄ wherein said phase
grating is of the checkerboard type with two levels of
5 thickness.

4.¹/₈. The system claimed in claim ¹/₄ wherein said
intensity and phase gratings operate in transmission
mode.

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5.¹/₈. The system claimed in claim ¹/₄ wherein said
intensity and phase gratings operate in reflection mode.